NETACP

```
NN      NN   SSSSSSSS  PPPPPPP   MM      MM   SSSSSSSS  GGGGGGGG  DDDDDDD    EEEEEEEEEEE  FFFFFFFFFFF
NN      NN   SSSSSSSS  PPPPPPP   MM      MM   SSSSSSSS  GGGGGGGG  DDDDDDD    EEEEEEEEEEE  FFFFFFFFFFF
NN      NN   SS        PP    PP  MMMM  MMMM             SS  GG    DD     DD  EE           FF
NNNN    NN   SS        PP    PP  MM MM MM MM            SS  GG    DD     DD  EE           FF
NNNN    NN   SS        PP    PP  MM  MM  MM            SS  GG     DD     DD  EE           FF
NN  NN  NN   SSSSSS    PPPPPPP   MM      MM   SSSSSS   GG         DD     DD  EEEEEEEE     FFFFFFFF
NN  NN  NN   SSSSSS    PPPPPPP   MM      MM   SSSSSS   GG         DD     DD  EEEEEEEE     FFFFFFFF
NN   NNNN         SS   PP        MM      MM        SS  GG  GGGGG  DD     DD  EE           FF
NN   NNNN         SS   PP        MM      MM        SS  GG  GGGGG  DD     DD  EE           FF
NN     NN         SS   PP        MM      MM        SS  GG     GG  DD     DD  EE           FF
NN     NN         SS   PP        MM      MM        SS  GG     GG  DD     DD  EE           FF
NN     NN   SSSSSSSS   PP        MM      MM   SSSSSSSS    GGGGGG  DDDDDDD    EEEEEEEEEEE  FF
NN     NN   SSSSSSSS   PP        MM      MM   SSSSSSSS    GGGGGG  DDDDDDD    EEEEEEEEEEE  FF
```

```
SSSSSSSS  DDDDDDD    LL
SSSSSSSS  DDDDDDD    LL
SS        DD     DD  LL
SS        DD     DD  LL
SS        DD     DD  LL
SS        DD     DD  LL
SSSSSS    DD     DD  LL
SSSSSS    DD     DD  LL
      SS  DD     DD  LL
      SS  DD     DD  LL
      SS  DD     DD  LL
      SS  DD     DD  LL
SSSSSSSS  DDDDDDD    LLLLLLLLLL
SSSSSSSS  DDDDDDD    LLLLLLLLLL
```

```
              MODULE  $nspmsgdef

{*
{*            NSPMSGDEF.SDL    - NSP and Transport Message Definitions
{*            Version 'V04-000'
{*
{********************************************************************************
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{********************************************************************************
{*
{*
{* AUTHOR:              Alan D. Eldridge        1-April-1982
{*
{* MODIFIED BY:
{*
{*   V03-005 RNG0004          Rod N. Gamache  19-Nov-1982
{*           Change ENDNODE format messages to LONG format
{*           messages. Change RTS bit definitions in LONG format
{*           messages to be in the flags byte, rather than the
{*           service class.
{*
{*   V03-004 RNG0003          Rod N. Gamache  11-Oct-1982
{*           Add Phase IV Level 2 router definitions
{*
{*   V03-C03 RNG0002          Rod N. Gamache  29-Sep-1982
{*           Add Phase IV endnode definitions
{*
{*   V03-001 RNG0001          Rod N. Gamache  14-Jul-1982
{*           Add Phase IV transport definitions
{*
```

```
{++
{
{    A thumbnail sketch of the NSP message formats is as follows:
{
{    <0eb0 0000><4b_LINK><{2b_ACK}<2b_SEG><DATA>              DATA MSG
{    <0011 0000><4b_LINK><{2b_ACK}<2b_SEG><u16_DATA>         INT. MSG
{    <0001 0000><4b_LINK><{2b_ACK}<2b_SEG><2b_FLOW>          L.S. MSG
{
{    <0000 0100><4b_LINK><2b_ACK>                            DATA ACK
{    <0001 0100><4b_LINK><2b_ACK>                            OTH. ACK
{    <0010 0100><2b_DST>                                     CA
{
{    <0001 1000><2k_0><2b_SRC><1b_SRV><1b_INFO><2b_SEGSIZ><CTL>      CI
{    <0010 1000><4b_LINK><1b_SRV><1b_INFO><2b_SEGSIZ><i16_DATA>     CC
{    <0011 1000><4b_LINK><2b_REA><i16_DATA>                         DI
{    <0100 1000><4b_LINK><2b_REA>                                   DC
{    <0100 1000><2b_DST><2k_0><2k_1>                                CT
{    <0100 1000><4b_LINK><2k_42>                                    DT
{    <0100 1000><4b_LINK><2k_41>                                    NLT
{
{    <0101 1000>------                                       START
{
{    <4b_LINK   ::=   <2b_DST><2b_SRC>             link address, not = 0
{    <2b_ACK    ::=   <1001><12 bit seg number>    if NAK
{                     <1000><12 bit seg number>    if ACK
{    <2b_SEG>   ::=   <0000><12 bit seg number>
{    <2b_FLOW>  ::=   <0000><2 bit subchannel><2 bit mode><1 byte count>
{                          0 => data        00 => no change
{                          1 => interrupt   01 => stop
{                                           10 => start
{
{    <1b_SRV>   ::=   <00000001>                    if no flow control
{                     <00000101>                    if segment flow control
{                     <00001001>                    if message flow control
{    <1b_INFO>  ::=   <00000001>                    if NSP V3.1
{                     <00000000>                    if NSP V3.2
{
{
{    <CTL>      ::=   <DNAME><SNAME><00vv00da><ACCOUNT><i16_DATA>
{                                        if a      if d
{                          vv = Session control version
{                           0 = Version 1.0
{                              All other are reserved
{                <DNAME> ::= <NAME>
{                <SNAME> ::= <NAME>
{                <NAME>  ::= <1k_0><1b_objtyp>  objtyp not= 0
{                            <1k_1><1k_0><i16_desc>
{                            <1k_2><1k_0><2b_gcod><2b_ucod><i12_desc>
{                <ACCT>  ::= <i39_id><i39_psw><i39_acc>
{
{--
AGGREGATE  nspmsg  STRUCTURE  PREFIX nsp$ TAG $$;
    {
```

```
{
{   Define message codes -- first byte of message
{
{
CONSTANT  msg_ci    EQUALS %x18 TAG c:       { Connect Initiate
CONSTANT  msg_ca    EQUALS %x24 TAG c:       { Connect Acknowledge
CONSTANT  msg_cc    EQUALS %x28 TAG c:       { Connect Confirm
CONSTANT  msg_data  EQUALS %x00 TAG c:       { Data
CONSTANT  msg_int   EQUALS %x30 TAG c:       { Interrupt
CONSTANT  msg_ls    EQUALS %x10 TAG c:       { Link Service
CONSTANT  msg_liack EQUALS %x14 TAG c:       { LS/INT Ack
CONSTANT  msg_dtack EQUALS %x04 TAG c:       { Data ACK
CONSTANT  msg_di    EQUALS %x38 TAG c:       { Disconnect Initiate
CONSTANT  msg_dc    EQUALS %x48 TAG c:       { Disconnect Confirm

{
{
{   Define maximum message header sizes
{
{
CONSTANT  hsz_ci    EQUALS  240 TAG c:       {&Connect Initiate
CONSTANT  hsz_ca    EQUALS    3 TAG c:       { Connect Acknowledge
CONSTANT  hsz_cc    EQUALS  100 TAG c:       {&Connect Confirm
CONSTANT  hsz_data  EQUALS    9 TAG c:       { Data
CONSTANT  hsz_int   EQUALS    9 TAG c:       { Interrupt
CONSTANT  hsz_ls    EQUALS    9 TAG c:       { Link Service
CONSTANT  hsz_ack   EQUALS    7 TAG c:       { LS/INT or Data Ack
CONSTANT  hsz_di    EQUALS   22 TAG c:       { Disconnect Initiate
CONSTANT  hsz_dc    EQUALS   22 TAG c:       { Disconnect Confirm
CONSTANT  hsz_cd    EQUALS  240 TAG c:       {&Maximum of all connect
                                             {  or disconnect messages
                                             {
qual          UNION;                         { Miscellaneous message fields
                                             {
  qual_msg      STRUCTURE TAG $$;            { Misc. MSG field qualifiers
    msg_sp1     BITFIELD  LENGTH 4;          { Skip constant part of field
    msg_li      BITFIELD  MASK;             { Set if not DATA subchannel msg
    msg_int     BITFIELD  MASK;             { Set if INT rather than LS msg
    dstlnk      WORD;                        { Destination link address
    srclnk      WORD;                        { Source link address
    END qual_msg;                            {
                                             {
  qual_data     STRUCTURE TAG $$;            { Qualifiers to NSP$C_MSG_DATA
    data_sp     BITFIELD  LENGTH 5;          { Skip constant part of field
    data_bom    BITFIELD  MASK;             { Set if first seg in message
    data_eom    BITFIELD  MASK;             { Set if last seg in message
    data_ovfw   BITFIELD  MASK;             { Set if no further segs could
    END qual_data;                          {  be buffered without overflow
                                             {  of the session ctl buffer -
                                             {  INTERNAL ONLY, not in NSP
                                             {
  qual_ack      STRUCTURE TAG $$;            { Qualifiers to all ACK fields
    ack_num     BITFIELD  MASK  LENGTH 12;   { Seg number being ACK'd
    ack_nak     BITFIELD  MASK;             { Set if this is a NAK
    ack_sp2     BITFIELD  LENGTH 2;          { Skip reserved field
    ack_valid   BITFIELD  MASK;             { Set to identify field as an
```

```
    END qual_ack;                                { ACK and not just a segment #
                                                 {
    qual_srv      STRUCTURE TAG $$;              { Qualifiers to SERVICES field
                                                 { in CI and CC messages
    srv_01      BITFIELD  MASK   LENGTH 2;       { Must be value "01"
    srv_flw     BITFIELD  MASK   LENGTH 2;       { Receiver's flow control mode
    CONSTANT    srv_nfc   EQUALS 0 TAG c;        {  no flow control
    CONSTANT    srv_sfc   EQUALS 1 TAG c;        {  segment flow control
    CONSTANT    srv_mfc   EQUALS 2 TAG c;        {  message flow control
    srv_sp1     BITFIELD  MASK   LENGTH 3;       { Reserved bits
    srv_ext     BITFIELD  MASK;                  { Set if field extends to next
                                                 { byte
    CONSTANT    srv_req   EQUALS %B11110011      { Mask of SERVICE bits which
                          TAG m;                 { must have a know value
    CONSTANT    srv_req   EQUALS %B00000001      { ...that known value
                          TAG c;
    END qual_srv;                                {
                                                 {
    qual_inf      STRUCTURE TAG $$;              { Qualifiers to INFO field in
                                                 { CI and CC messages
    inf_ver     BITFIELD  MASK   LENGTH 2;       { NSP version number
    CONSTANT    inf_v32   EQUALS 0 TAG c;        {  Version 3.2
    CONSTANT    inf_v31   EQUALS 1 TAG c;        {  Version 3.1
    CONSTANT    inf_v33   EQUALS 2 TAG c;        {  Version 3.3
                                                 {  "3" is reserved
    END qual_inf;                                {
                                                 {
    qual_flw      STRUCTURE TAG $$;              { Link Service message LSFLAGS
                                                 { field definition
    flw_mode    BITFIELD  MASK   LENGTH 2;       { Back-pressure value field
    CONSTANT    flw_nop   EQUALS 0 TAG c;        {  no-change
    CONSTANT    flw_xoff  EQUALS 1 TAG c;        {  stop flow
    CONSTANT    flw_xon   EQUALS 2 TAG c;        {  start flow
                                                 {  "3" is reserved
    flw_chan    BITFIELD  MASK   LENGTH 2;       { Sub channel selector
    CONSTANT    flw_data  EQUALS 0 TAG c;        {  Data subchannel
    CONSTANT    flw_int   EQUALS 1 TAG c;        {  Interrupt subchannel
                                                 {  "2" and "3" are reserved
    flw_drv     BITFIELD  MASK   LENGTH 4;       { Define the remainder of the
                                                 { field for Netdriver internal
                                                 { flags
    END qual_flw;                                {
                                                 {
    qual_altflw STRUCTURE TAG $$;                { Alternate Link Service
                                                 { message LSFLAGS
    {
    {   These flags define the LSFLAGS in an alternate way to "qual_flw"
    {   above.  It depicts the same information, but takes advantage of
    {   the fact that not all values of the 2-bit fields are used and hence
    {   1-bit flags can be used rather than constants.
    {
    {   The first 4 bits are part of NSP.  The last 4 bits are Netdriver
    {   internal flags.
    {
    flw_xoff    BITFIELD  MASK   LENGTH 1;       { Stop flow on DATA subchannel
    flw_xon     BITFIELD  MASK   LENGTH 1;       { Start "   "   "   "
```

```
     flw_lisub BITFIELD  MASK    LENGTH 1;     { Flow control count is for the
                                               { Link Service/Interrupt, and
                                               { not the DATA, subchannel
     flw_sp1   BITFIELD  MASK    LENGTH 1;     { Spare
     flw_inuse BITFIELD  MASK    LENGTH 1;     { XWB$B_X_FLW is in use
     flw_int   BITFIELD  MASK    LENGTH 1;     { XWB$B_X_FLW describes an
                                               { "Interrupt", not a "Link-
                                               { Service", message
     flw_sp2   BITFIELD  MASK    LENGTH 1;     { Spare
     flw_sp3   BITFIELD  MASK    LENGTH 1;     { Spare
     END qual_altflw;                          {

  END qual;

END nspmsg ;
```

```
{
{
{   Phase III Routing Message Definitions
{
{   The following is a thumbnail sketch of the possibilities for the first byte
{   in a received message:
{
{        <0000 1000>        Phase II NOP
{        <0101 1000>        Phase II Start
{
{        <0100 xx10>        Phase II route header
{        <000x x010>        Phase III route header
{
{        <000x x010>        Phase IV non-broadcast circuit route header
{        <00xx 0x10>        Phase IV broadcast circuit route header
{
{        <0000 0001>        Phase III init
{        <0000 0011>        Phase III verification
{        <0000 0101>        Phase III hello message
{        <0000 0111>        Phase III routing message
{
{        <0000 1001>        Phase IV Level 2 routing message
{        <0000 1011>        Phase IV broadcast circuit Router hello message
{        <0000 1101>        Phase IV broadcast circuit Endnode hello message
{
{
{
AGGREGATE  tr3msg  STRUCTURE  PREFIX tr3$ TAG $$;
    {
    {
    {   Define message codes --  first byte of message  (DECnet calls these
    {                    "control flags")
    {
    {
    CONSTANT  msg_init  EQUALS %x01 TAG c;         { "Initialization" message
    CONSTANT  msg_verf  EQUALS %x03 TAG c;         { "Verification" message
    CONSTANT  msg_hello EQUALS %x05 TAG c;         { "Hello" message
    CONSTANT  msg_rout  EQUALS %x07 TAG c;         { "Routing" message
    CONSTANT  msg_data  EQUALS %x02 TAG c;         { Normal route-thru message
                                                   {   (without qualifiers)
    CONSTANT  msg_str2  EQUALS %x58 TAG c;         { Phase II "Start" message
    CONSTANT  msg_nop2  EQUALS %x08 TAG c;         { Phase II "Nop" message

    {
    {
    {   Define message header sizes where applicable
    {
    {
    CONSTANT  hsz_data  EQUALS   6  TAG c;         { Normal route-thru message

    {
    {
    {   Define qualifiers to the various message codes
```

```
{
{
qual          UNION;                           { Miscellaneous message fields

  qual_msg    STRUCTURE TAG $$;                 { Common qualifiers
    msg_ctl   BITFIELD  MASK LENGTH 1;          { Set on Phase III control msgs
                                                { - clear on all other messages
    msg_rth   BITFIELD  MASK LENGTH 1;          { Set if a Phase II or III
                                                { route-header,  clear if a
                                                { Phase II control message
    end qual_msg;                               {

  qual_rtflg  STRUCTURE TAG $$;                 { Route-header qualifiers
    rtflg_012 BITFIELD         LENGTH 3;        { Must have the value 010
    rtflg_rqr BITFIELD  MASK LENGTH 1;          { Set if "return-to-sender" on
                                                { error is requested
    rtflg_rts BITFIELD  MASK LENGTH 1;          { Set if message is being
                                                { "returned-to-sender"
    rtflg_5   BITFIELD         LENGTH 1;        { Must be clear
    rtflg_ph2 BITFIELD  MASK LENGTH 1;          { Set if Phase II route-header
    rtflg_7   BITFIELD         LENGTH 1;        { Must be clear
    END qual_rtflg;

  END qual;

END tr3msg;
```

```
{
{
{    Phase IV Routing Message Definitions
{
{    The following is a thumbnail sketch of the possibilities for the first byte
{    in a received message:
{
{       <000x x010>      Phase IV non-broadcast circuit route header
{       <00xx 0x10>      Phase IV broadcast circuit route header
{
{       <0000 1001>      Phase IV Level 2 routing message
{       <0000 1011>      Phase IV broadcast circuit Router hello message
{       <0000 1101>      Phase IV broadcast circuit Endnode hello message
{
{
{
AGGREGATE  tr4msg  STRUCTURE  PREFIX tr4$ TAG $$;
{
{
{    Define message codes --  first byte of message  (DECnet calls these
{                             "control flags")
{
{
    CONSTANT  msg_bcrhel EQUALS %xB TAG c;        { Broadcast Circuit Router
                                                  { "Hello" message
    CONSTANT  msg_bcehel EQUALS %xD TAG c;        { Broadcast Circuit Endnode
                                                  { "Hello" message
                                                  { (without qualifiers)
    CONSTANT  msg_rdata EQUALS %x02 TAG c;        { Normal route-thru message
    CONSTANT  msg_ldata EQUALS %x06 TAG c;        { Long header data message
{
{
{    Define constants
{
{
    CONSTANT  T3MULT    EQUALS %x2 TAG c;         { T3 multiplier
    CONSTANT  BCT3MULT  EQUALS %x8 TAG c;         { Broadcast Circuit T3
                                                  { multiplier
    CONSTANT  VER_LOWW  EQUALS %x0002 TAG c;      { Transport's version number
    CONSTANT  VER_HIB   EQUALS %x00 TAG c;        {         V2.0.0
    CONSTANT  HIORD     EQUALS %x000400AA TAG c;  { HIORD part of node address
    CONSTANT  RTR_LVL1  EQUALS %x2 TAG c;         { Level 1 router type code
    CONSTANT  RTR_LVL2  EQUALS %x1 TAG c;         { Level 2 router type code
    CONSTANT  END_NODE  EQUALS %x3 TAG c;         { Endnode type code
    CONSTANT  BCR_MID1  EQUALS %x030000AB TAG c;  { Broadcast circuit router's
    CONSTANT  BCR_MID2  EQUALS %x0 TAG c;         {   multicast ID
    CONSTANT  BCE_MID1  EQUALS %x040000AB TAG c;  { Broadcast circuit endnode's
    CONSTANT  BCE_MID2  EQUALS %x0 TAG c;         {   multicast ID
    CONSTANT  PRO_TYPE  EQUALS %x0360   TAG c;    { Transports protocol type

    {
    {
```

```
      {  Define message header sizes where applicable
      {
      {
      CONSTANT  hsz_data  EQUALS   21  TAG c;        { BC Endnode route-thru message

      {
      {
      {  Define qualifiers to message codes
      {
      {
      qual         UNION;                            { Miscellaneous message fields

        qual_rtflg  STRUCTURE TAG $$;                { Long Route-header
                                                     {   qualifiers
          rtflg_01  BITFIELD        LENGTH 2;        { Must have the value 10
          rtflg_lng BITFIELD  MASK LENGTH 1;         { Set if Long format message
          rtflg_rqr BITFIELD  MASK LENGTH 1;         { Set if return-to-sender requested
          rtflg_rts BITFIELD  MASK LENGTH 1;         { Set if message is being
                                                     {  "returned-to-sender"
          rtflg_ini BITFIELD  MASK LENGTH 1;         { Set if Intra-NI message
                                                     {   (on route-thru messages)
          rtflg_ver BITFIELD        LENGTH 2;        { Route header version number
          END qual_rtflg;

        qual_sclass  STRUCTURE TAG $$;               { Long format SERVICE CLASS
                                                     {   qualifiers
          sclass_metr  BITFIELD       LENGTH 1;      { Metric - RESERVED
          sclass_1     BITFIELD       LENGTH 1;      { Must be clear - RESERVED
          sclass_ls    BITFIELD       LENGTH 1;      { Load splitting - RESERVED
          sclass_suba  BITFIELD       LENGTH 1;      { Sub Area - RESERVED
          sclass_bc    BITFIELD       LENGTH 1;      { Broadcast - RESERVED
          sclass_57    BITFIELD       LENGTH 3;      { Must be clear - RESERVED
          END qual_sclass;

        qual_addr    STRUCTURE TAG $$;               { Node address qualifiers
          addr_dest BITFIELD  MASK LENGTH 10;        { Destination address field
          addr_area BITFIELD  MASK LENGTH 6;         { Area part of node address
          END qual_addr;

        END qual;

      END tr4msg;

END_MODULE  $nspmsgdef ;
```

NETUSR
SDL

LIBTAIL
B32

XWBDEF
SDL

NETDEFS
MAR

PSIUSR
SDL

NETDRVMAC
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NDDRIVER
LIS

NSPMSGDEF
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